

What is claimed is:

1. A method of controlling the transmission of a light signal, comprising:

(a) transmitting said light signal through a first fiber optic line; and

(b) receiving said light signal with a light receiving unit operatively coupled

5 to said first fiber optic line, said light receiving unit being operative to refract said light signal so that said light signal is substantially prevented from being transmitted through said light receiving unit if an intensity level of said light signal has a predetermined relationship with an intensity threshold level.

10 2. The method of claim 1, further comprising:

(c) generating said light signal with an electrooptical converter operatively coupled to said first fiber optic line.

15 3. The method of claim 1, further comprising:

(d) transmitting said light signal through a second fiber optic line which is operatively coupled to said light receiving unit if said light receiving unit does not refract said light signal.

4. The method of claim 3, further comprising:

20 (e) receiving said light signal with an electrooptical converter operatively coupled to said second fiber optic line.

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5. The method of claim 1, wherein:

(b) includes raising said intensity level of said light signal so that said intensity level of said light signal is greater than said intensity threshold level and said light receiving unit refracts said light signal so as to substantially prevent
5 said light signal from being transmitted through said light receiving unit.

6. The method of claim 1, wherein:

said light receiving unit includes a first optical material and a second optical material having an interface therebetween,

10 said first optical material has a linear index of refraction,

said second optical material has a nonlinear index of refraction which is dependent on said intensity level of said light signal, and

(b) includes refracting said light signal at said interface if said linear index of refraction of said first optical material does not match said nonlinear index of refraction of said second optical material.
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7. The method of claim 5, wherein:

(b) also includes lowering said intensity level of said light signal so that said intensity level of said light signal is less than said intensity threshold level
20 and said light receiving unit does not refract said light signal such that said light signal is transmitted through said light receiving unit.

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FOOTNOTES

8. An arrangement for controlling the transmission of a light signal,
comprising:

a first fiber optic line for transmitting said light signal; and

a light receiving unit operatively coupled to said first fiber optic line so that

5 said light signal is received by said light receiving unit, said light receiving unit
being operative to refract said light signal so that said light signal is substantially
prevented from being transmitted through said light receiving unit if an intensity
level of said light signal has a predetermined relationship with an intensity
threshold level.

10 9. The arrangement of claim 8, further comprising:

an electrooptical converter operatively coupled to said first fiber optic line,
wherein said electrooptical converter generates said light signal such that said
light signal is transmitted through said first fiber optic line.

15 10. The arrangement of claim 8, further comprising:

a second fiber optic line operatively coupled to said light receiving unit
such that if said light receiving unit does not refract said light signal said light
signal is transmitted through said second fiber optic line.

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11. The arrangement of claim 10, further comprising:

an electrooptical converter operatively coupled to said second fiber optic line such that said electrooptical converter receives said light signal if said light receiving unit does not refract said light signal.

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12. The arrangement of claim 8, wherein:

said light receiving unit includes a first optical material and a second optical material having an interface therebetween,

said first optical material has a linear index of refraction,

said second optical material has a nonlinear index of refraction which is dependent on said intensity level of said light signal received with said light receiving unit, and

said light signal is refracted at said interface if said linear index of refraction of said first optical material does not match said nonlinear index of refraction of said second optical material.

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13. An optical switch arrangement for controlling the transmission of a light signal, comprising:

a first fiber optic line for transmitting said light signal; and

a light receiving unit operatively coupled to said first fiber optic line so that

5 said light signal is received by said light receiving unit, wherein (i) said light receiving unit includes a first optical material and a second optical material having an interface therebetween, (ii) said first optical material has a linear index of refraction, (iii) said second optical material has a nonlinear index of refraction which is dependent on an intensity level of said light signal received with said
10 light receiving unit, and (iv) said light signal is refracted at said interface such that said light signal is substantially prevented from being transmitted through said light receiving unit if said linear index of refraction of said first optical material does not match said nonlinear index of refraction of said second optical material.

14. The arrangement of claim 13, further comprising:

an electrooptical converter operatively coupled to said first fiber optic line, wherein said electrooptical converter generates said light signal such that said light signal is transmitted through said first fiber optic line.

15. The arrangement of claim 13, further comprising:

a second fiber optic line operatively coupled to said light receiving unit such that if said light receiving unit does not refract said light signal said light signal is transmitted through said second fiber optic line.

16. The arrangement of claim 15, further comprising:

an electrooptical converter operatively coupled to said second fiber optic line such that said electrooptical converter receives said light signal if said light receiving unit does not refract said light signal.

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17. The arrangement of claim 13, wherein:

said light receiving unit refracts said light signal so as to substantially prevent said light signal from being transmitted through said light receiving unit when said intensity level of said light signal is greater than said intensity threshold level.

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18. The arrangement of claim 13, wherein:

said light receiving unit is positioned within a lumen defined by said first fiber optic line.

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19. The arrangement of claim 13, wherein:

said first optical material includes quartz.

20. The arrangement of claim 13 wherein:

said second optical material includes a material selected from the group of materials consisting of MBBA, MEBBA, PePmeOB, and BuPPeB.

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21. An optical communications system for transmitting information,
comprising:

an optical switch arrangement for controlling transmission of a light signal,
wherein said optical switch arrangement includes (i) a fiber optic line for
5 transmitting said light signal and (ii) a light receiving unit operatively coupled to
said fiber optic line so that said light signal is received by said light receiving unit,
wherein (A) said light receiving unit includes a first optical material and a second
optical material having an interface therebetween, (B) said first optical material
has a linear index of refraction, (C) said second optical material has a nonlinear
10 index of refraction which is dependent on an intensity level of said light signal
received with said light receiving unit, and (D) said light signal is refracted at said
interface such that said light signal is substantially prevented from being
transmitted through said light receiving unit if said linear index of refraction of
said first optical material does not match said nonlinear index of refraction of said
15 second optical material.

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